

REPORT OF
MONTGOMERY COUNTY
DEPARTMENT OF PERMITTING SERVICES STUDY

CLARKSBURG TOWN CENTER, PHASE 1B – PART 3

- Clarks Crossing Drive, CL Sta. 9+25 to 16+65
 - Clarksburg Square Road, CL Sta. 34+50 to 45+79
- Montgomery County, Maryland

August 27, 2001

Prepared For:

Terrabrook Clarksburg, L.L.D.

c/o DSS, Inc.

P.O. Box 287

Clarksburg, Maryland 20871

GTA Job No.: 99530

Prepared By:

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GEO-TECHNOLOGY ASSOCIATES, INC.

GEOTECHNICAL AND
ENVIRONMENTAL CONSULTANTS

A Practicing ASFE Member Firm



August 27, 2001

Terrabrook Clarksburg, L.L.D.
c/o DSS, Inc.
P.O. Box 287
Clarksburg, MD 20871

Attn: Mr. Jim Richmond

Re: *Clarksburg Town Center, Phase 1B -- Part 3*
Preliminary Geotechnical Exploration
Montgomery County Department of Permitting Services Study
· Clarks Crossing Drive, CL Sta 9+25 to 16+65;
· Clarksburg Square Road, CL Sta 34+50 to 45+79;
Montgomery County, Maryland

Gentlemen:

Terrabrook intends to develop roads and utilities within Phase 1B of the Clarksburg Town Center development in Montgomery County, Maryland. In conjunction with the proposed construction, Geo-Technology Associates, Inc. (GTA) performed a subsurface exploration, including test borings and test pit excavations, and laboratory testing of recovered samples.

This report presents GTA's conclusions and recommendations regarding utility installation, pavement support and site grading, based on engineering analysis of the field and laboratory data. Subsurface data for a proposed groundwater recharge facility is also included. The exploration was completed in accordance with Montgomery County Department of Permitting Services (MCDPS) criteria, and in accordance with GTA's proposal dated July 10, 2001.

Proposed Grading

According to Grade Establishment Plans for Clarks Crossing Drive and Clarksburg Square Road, dated July 2001, prepared by Charles P. Johnson & Associates, Inc. (CPJ), cuts less than 5 feet and fills up to 22 feet will be required to establish final roadway grades. The roadways will be primarily filled to proposed grades. The maximum fill depth is planned on Clarksburg Square Road near CL Sta 41+00. Fills up to 20 feet will also be required in the right-of-way of Clarksburg Crossing Drive.

According to the plan entitled Clarksburg Town Center Stormwater Management, Section B, Part 3, prepared by CPJ, the proposed groundwater recharge facility, designated CW-7, will require excavation up to 14 feet to reach the proposed invert level.

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Detailed plans of the proposed utility installations and were not available at the date of this report. Boring depths were planned based on estimated invert levels at the boring locations, as provided by CPJ.

Site Conditions

Clarksburg Town Center is located on the east side of Frederick Road (MD 355) in the Clarksburg area of Montgomery County, Maryland. A Site Location Map is included as Figure 1 in Appendix A. The property is bound by Stringtown Road on the south, Frederick Road and Spire Street on the west, Clarksburg Road on the north, and Piedmont Road and private property to the east. Phase 1B is located in the western portion of the property, and will be accessed from existing Stringtown Road.

Phase 1B is situated on an open rolling field, with slopes falling gently to moderately toward the south and west. Approximate elevation above Mean Sea Level (MSL) ranges from 620 feet to 670 feet in the area addressed by this submittal.

Geology

According to the Geologic Map of Maryland (1973), and the Bedrock Map of Montgomery County, Maryland (1975) the site is located in the Piedmont Physiographic Province. The Piedmont rock formations are generally metamorphic, with younger igneous intrusions. The site is mapped within the Ijamsville Formation and the Marburg Schist, predominantly quartzitic and muscovitic schists, which generally decompose to sand and silt, with significant clay and mica fractions in some instances. Differential weathering is common, and as a result, the formations are characterized by irregular rock profiles. The differential weathering is most dramatic where the more durable rock veins are present within the schistose formation. Typical Piedmont rocks weather into saprolite of variable thickness, underlain by less weathered and then relatively sound rock. Please consult the referenced geologic publications for further detail.

Subsurface Exploration

This exploration included recently drilled SPT borings and test pits excavated in December of 2000, in conjunction with a previous submittal. The borings and test pits were performed at the approximate locations indicated on The Test Location Plan, included as Figure 2 in Appendix A. Test Pits TP-4 through TP-7, and Borings L-1, L-2, J-1, and SB-12 were located in areas of proposed roadway and utility construction. Boring GW-4 was located within the site of proposed groundwater recharge facility CW-7. The boring and test pit locations were selected by the site civil engineer and field-located via instrument survey. Due to access constraints caused by recent grading, boring GW-4 was offset approximately 60 feet eastward from the originally planned and staked location.

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Six samples were classified in accordance with the Unified Soil Classification System (USCS) and the system used by the American Association of State Highway and Transportation Officials (AASHTO). Five samples were also classified in accordance with the United States Department of Agriculture (USDA) soil classification system. Two samples were subjected to soil moisture-density relationship testing in accordance with AASHTO T-99, the Standard Proctor.

A California Bearing Ratio (CBR) test was performed upon the sample of USCS SM soil from Boring J-1, 1 to 6 feet. The CBR is used to characterize the relative suitability of a soil for roadway support. Results of this testing indicate that a CBR value of 1.3 may be assigned to the USCS SM designated soils present at this location.

The laboratory compaction and classification test data is summarized in Tables A and B. Please refer to the laboratory test data presented in Appendix B, and the laboratory summary sheet in Appendix C for further information.

TABLE A
SUMMARY OF COMPACTION DATA
(AASHTO T-99)

Boring #	Depth (ft)	Maximum Dry Density (pcf)	Optimum Moisture (%)	Natural Moisture (%)	AASHTO Classification
J-1	2.5 – 6.0	116.2	13.1	11.3	A-2-4
L-2	2.5 – 5.0	123.2	10.3	13.5	A-4

TABLE B
SUMMARY OF INDEX PROPERTY TESTING

Boring #	Depth (ft)	Liquid Limit	Plasticity Index	Unified Classification	USDA Classification	AASHTO Class.
L-2	0.5 – 1.5	40	4	SM, sand and clayey silt, some gravel	--	A-4
	2.5 – 4.0	NP*	NP	SM, sand and silt, little gravel	Loam	A-4
	5.0 – 6.5	NP	NP	SM, sand, some silt, little gravel	Sandy Loam	A-2-4
GW-4	18.5 – 20.0	NP	NP	SM, sand, some silt, trace gravel	Sandy Loam	A-2-4
J-1	0.0 – 1.5	NP	NP	ML, silt, some sand, some gravel	Silt Loam	A-4
	2.5 – 4.0	NP	NP	SM, sand, some silt, some gravel	Sandy Loam	A-2-4

* Non-Plastic Soil

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Conclusions and Recommendations

Based upon the results of this exploration, it is our opinion that construction of the proposed improvements is feasible, given that the following recommendations are observed, and that the standard level of care is maintained during construction. GTA's recommendations are provided in the following paragraphs.

1. Utilities

The medium-dense to very dense natural soils encountered in each boring and test pit, or controlled compacted fill is considered suitable for support of the proposed pipe systems. GTA recommends a six-inch granular bedding be placed to provide uniform support, as dictated by site conditions.

Based on SPT data from the borings and observations of the test pit excavation process, very dense weathered rock was present in each exploration, beginning at approximate depths of 7 to 17 feet (equivalent to 627.3 to 667.2 feet MSL). Although final utility invert elevations were not available at the date of this report, a review of proposed road grades indicates that very dense weathered rock may be encountered at utility inverts in the vicinity of Borings L-1 and L-2, especially in cases of deep utility excavation. Use of jacking or similar excavating techniques may be required to achieve proposed invert elevations at these locations, and elsewhere on site.

Groundwater was not encountered in the borings or test pits. Groundwater is not anticipated in utility excavations less than ten to fifteen feet below ground surface at the locations explored. In the unlikely event that groundwater is encountered, the contractor should be prepared to provide dewatering to facilitate utility installation. Contractors should generally provide adequate earth support and dewatering systems in utility trench excavations. Utility pipe systems below pavement and other structural areas should be backfilled using controlled, compacted fill. Soils used for backfill may require drying before effective compaction can occur. The backfill should be constructed in accordance with GTA's pavement recommendations.

GTA understands that data from Borings L-1 and L-2 will be used in design of blocking for the proposed 20-inch water line. Based on field and laboratory data, the following soil parameters are recommended for design purposes.

Anticipated Soil at Invert	USCS SM
Moist Unit Weight	120 pcf
Internal Friction Angle	30 degrees
Groundwater Elevation	Dry to Invert Level

2. Groundwater Recharge Facility

GTA understands that data from Boring GW-1 will be used in design of the proposed groundwater recharge facility at this location. The Standards and Specifications for Infiltration Practices by the Maryland Department of Natural Resources correlates USDA soil classifications with minimum infiltration rates. A minimum infiltration rate of 1.02 inches per hour is assigned to the USDA Sandy Loam soils recovered from the boring. GTA cautions that very dense soil conditions below a depth of approximately 17 feet may result in much slower infiltration rates. Further testing of in-situ soil conditions, including borehole permeability testing, and analysis of the impact on localized groundwater conditions should be performed by GTA when details of the proposed structure are finalized.

3. Pavement

Based on the referenced plans, the majority of roadways will be filled to proposed grades. Fill soils generated on site will likely consist of USCS SM and ML soils (AASHTO A-4 and A-2-4). As required by MCDPS, the top 12 inches of subgrade must meet the following criteria:

Maximum density (AASHTO T-99)	105 pcf minimum
Liquid Limit (AASHTO T-89)	40 maximum
Plasticity Index (AASHTO T-90)	12 maximum

Based on the laboratory testing and visual classification of the soils, all soils tested meet MCDPS plasticity and density requirements for the use in the top 12 inches of subgrade. Similarly, all of the soils tested are suitable for placement as fill below the upper 12 inches of subgrade. Based on GTA's experience on the Clarksburg Town Center project, some of the near surface soils narrowly meet the above requirements, and care should be taken not to use materials that are more plastic in the upper 12 inches of subgrade.

Based on boring and laboratory data, and GTA's experience on projects in Germantown and Clarksburg, it is likely that the predominantly silty native soils present in the upper two to five feet at the test locations will have low CBR values. Based on GTA's experience, it is likely that even where materials meet MCDPS specifications, treatment with cement or the inclusion of a stone base may be required due to low CBR values. Laboratory testing of USCS SM soil recovered from Boring J-1, 1 to 6 feet, indicates that a CBR value of 1.3 may be assigned to these soils. GTA recommends that coarser soils, such as those that contain a

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significant quantity of rock fragments, be used in the upper 12 inches of subgrade. The coarser material is anticipated to provide a higher CBR value, and will be more suitable for direct pavement support.

Very dense weathered rock materials were encountered in the borings, but are not anticipated to significantly impact mass grading. The weathered rock materials were generally encountered below proposed roadway elevations. More resistant materials, if encountered, may require blasting in localized areas, but this condition is not anticipated to significantly impact this phase of development. Similarly, groundwater is not anticipated to impact mass grading in the study area.

All roadway areas should be stripped of topsoil and organic materials. It is likely that the topsoil layer will be thicker in swales than in upland areas of the site. Topsoil thus encountered should be evaluated by GTA prior to stripping. In areas requiring fill, the resulting grade should be proof-rolled in the presence of a geotechnical engineer or his representative. Any unstable materials thus encountered should be over-excavated to a competent bearing strata, prior to the placement of structural fill.

The top 12 inches of roadway subgrade should be compacted to 100 percent of the maximum dry density as determined by AASHTO T-99, the standard proctor. Compactive effort should be verified by in-place density testing. If the natural moisture content of the soils is not near the optimum moisture, moisture conditioning will be required.

LIMITATIONS

This report has been prepared for the exclusive use of Terrabrook Clarksburg, L.L.D., in accordance with generally accepted geotechnical engineering practice. No other warranty, express or implied, is made.

The analysis and recommendations contained in this report are based on the data obtained from limited observation and testing of the surface materials. The test borings indicate soil conditions only at specific locations and times, and only to the depths penetrated. They do not necessarily reflect strata variations that may exist between the test boring locations. Consequently, the analysis and recommendations must be considered preliminary until the subsurface conditions can be verified by direct observation at the time of construction. If variations in subsurface conditions from those described are noted during construction, recommendations in this report may need to be re-evaluated.

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In the event that any changes in the nature, design, or location of the facilities are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report are verified in writing. Geo-Technology Associates, Inc. is not responsible for any claims, damages, or liability associated with interpretation of subsurface data or reuse of the subsurface data or engineering analysis without the express written authorization of Geo-Technology Associates, Inc.

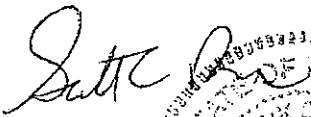
In accordance with the guidelines of ASFE/The Association of Engineering firms Practicing in the Geosciences, it is recommended that Geo-Technology Associates, Inc. be retained to provide continuous soils engineering services for this project. Participation of GTA will facilitate compliance with GTA's recommendations, and allow changes to be made in these recommendations, in the event that subsurface conditions are found to vary from those anticipated prior to the start of construction.

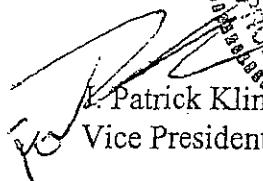
This report and the attached logs are instruments of service. If certain conditions or items are noted during our investigation, Geo-Technology Associates, Inc. may be required by prevailing statutes to notify and provide information to regulatory or enforcement agencies. Geo-Technology Associates, Inc. will notify our Client should a required disclosure condition exist.

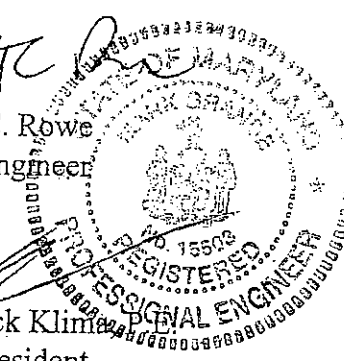
This report was prepared by Geo-Technology Associates, Inc. (GTA) for the sole and exclusive use of Geo-Technology Associates, Inc. and Terrabrook Clarksburg, L.L.D. Use and reproduction of this report by any other person without the expressed written permission of GTA and Terrabrook Clarksburg, L.L.D. is unauthorized and such use is at the sole risk of the user.

Thank you for the opportunity to be of assistance on this project. If you have any questions or need further information, please do not hesitate to call our office.

Sincerely,
GEO-TECHNOLOGY ASSOCIATES, INC.


Scott C. Rowe
Staff Engineer


Patrick Klinck
Vice President



Important Information About Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. *No one except you* should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. And *no one—not even you—should* apply the report for any purpose or project except the one originally contemplated.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, *do not rely on a geotechnical engineering report* that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

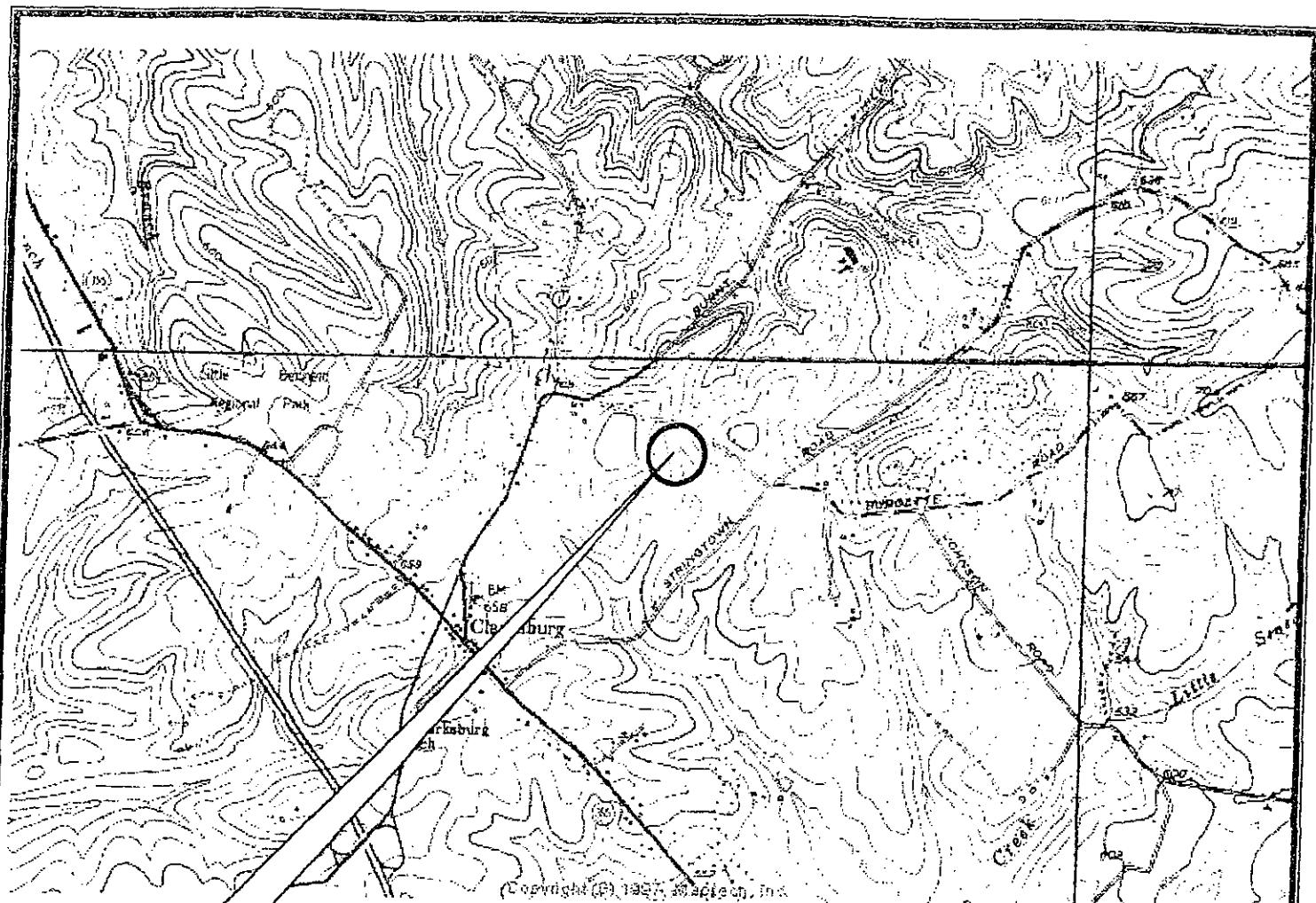
A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions *only* at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an *opinion* about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

APPENDIX A

FIGURES



SITE LOCATION



Base map obtained from MAPTECH TERRAIN NAVIGATOR CD-ROM
 USGS 7.5-Minute Series (Topographic)
 Germantown Quadrangle, Maryland
 1953, Photorevised 1979



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Clarksburg Town Center
SITE LOCATION MAP
MONTGOMERY COUNTY,
MARYLAND

JOB NO:

99530

DATE:

August 20, 2001

SCALE:

Not to Scale

DRAWN BY:

SCR

REVIEWED
BY:

JPK

FIGURE
NO:

1

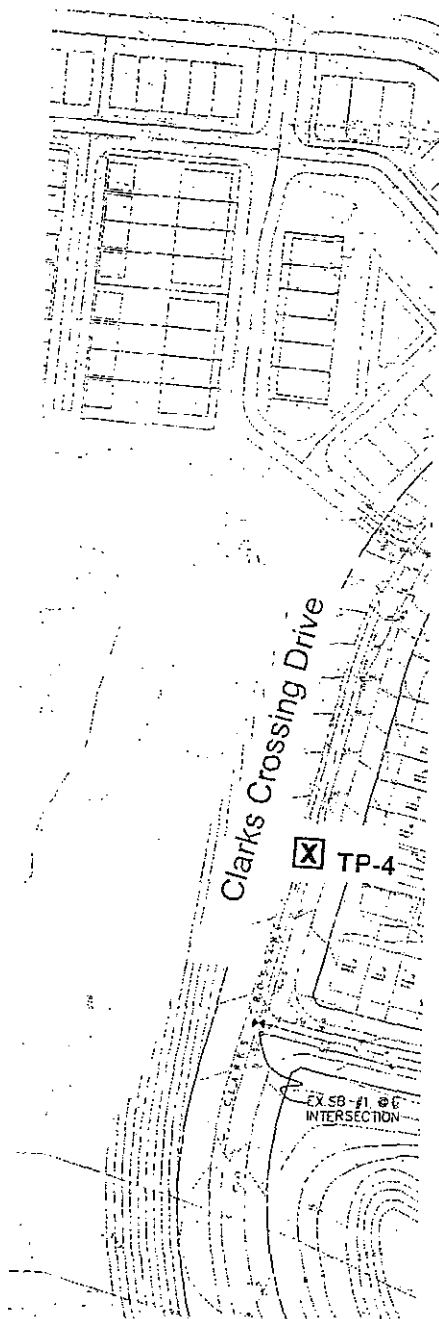


Figure 2

VTS

Clarksburg Town Center TEST LOCATION PLAN Montgomery County, Maryland

LEGEND:

- ⊗: APPROXIMATE BORING LOCATION - PERFORMED JUL
- ⊠: APPROXIMATE TEST PIT LOCATION - PERFORMED DE

NOTES:

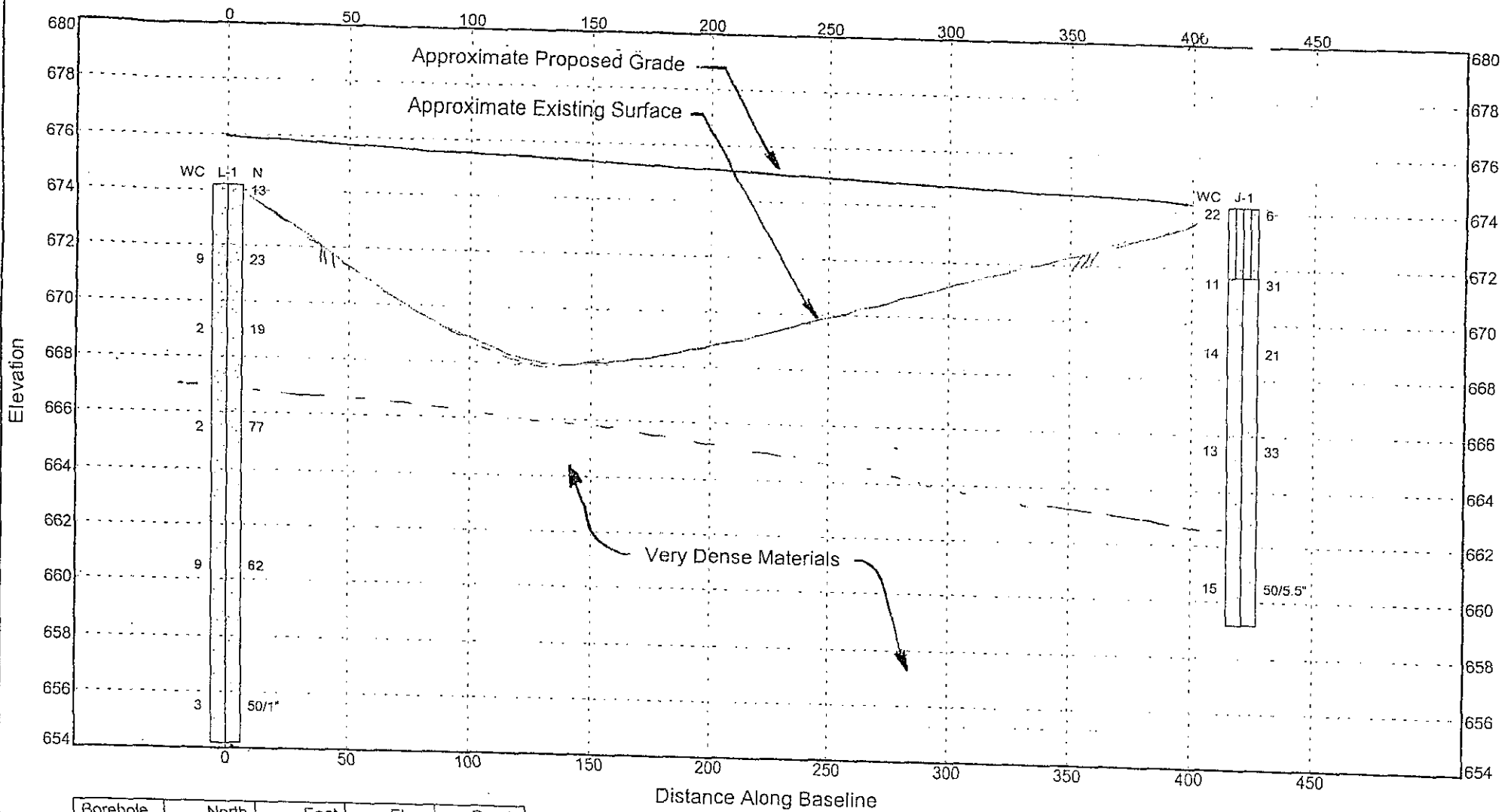
1. BASE MAP DEVELOPMENT FROM A SITE PLAN PROVIDED BY THE TEST BORINGS AND TEST PITS WERE FIELD-LOGGED. DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE

REVIEW BY

JPK

JOB NO.

99530



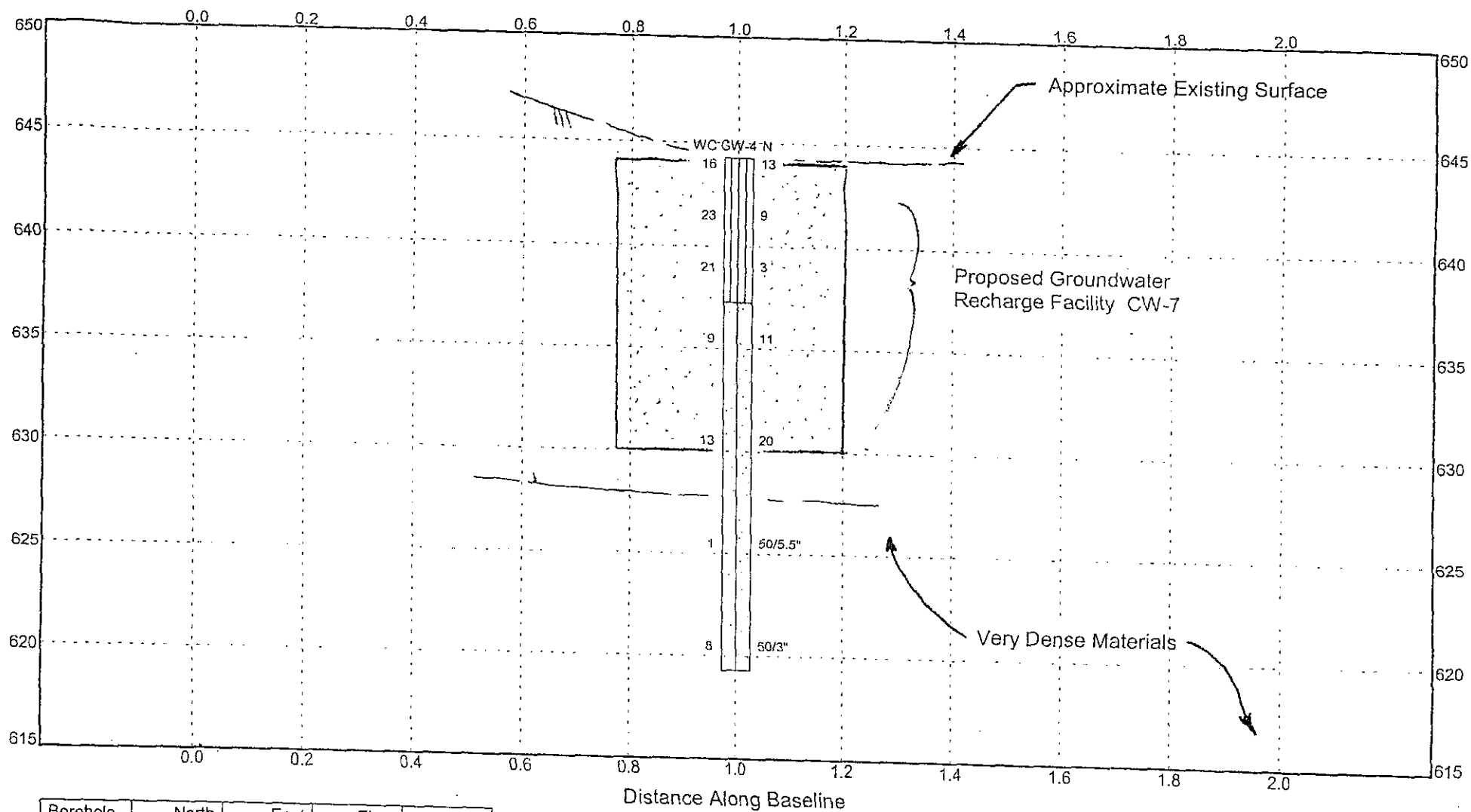
Borehole	North	East	Elev.	Depth
J-1	575407	1236586	674.2	15.0
L-1	575673	1236260	674.2	20.0

DISTANCES:
Beginning 0
Ending 450
VIEWING ANGLES (degrees):
Horizontal 0.0
Vertical 0.0

Position	North	East
Left, Front	575673	1236260
Right, Front	575389	1236609
Left, Back	575673	1236260
Right, Back	575389	1236609

SUBSURFACE FENCE DIAGRAM Section A-A		
Clarksburg Town Center Montgomery County, Maryland		
PROJECT #	DATE	FIGURE
99530	Aug 01	3

Elevation



Borehole	North	East	Elev.	Depth
GW-4	574798	1235862	644.3	25.0

DISTANCES:

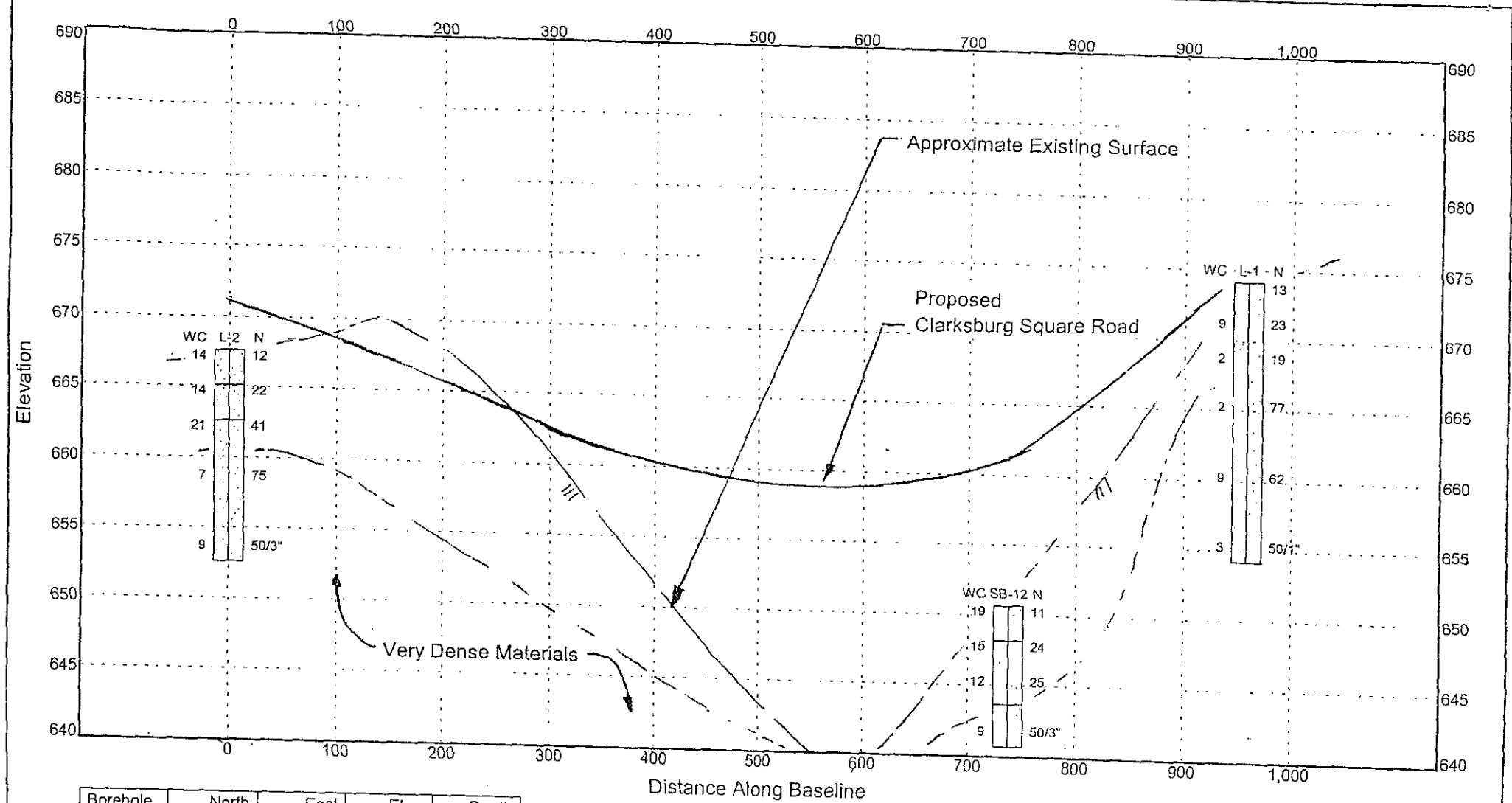
Beginning 0
 Ending 2
 VIEWING ANGLES (degrees):
 Horizontal 0.0
 Vertical 0.0

Position	North	East
Left, Front		
Right, Front		
Left, Back		
Right, Back		

SUBSURFACE FENCE DIAGRAM
 Section B-B

Clarksburg Town Center
 Montgomery County, Maryland

PROJECT #	DATE	FIGURE
99530	Aug 01	4



Borehole	North	East	Elev.	Depth
L-1	575673	1236260	674.2	20.0
L-2	575131	1235469	667.8	15.0
SB-12	575498	1236110	650.7	10.0

DISTANCES:

Beginning 0
 Ending 1000
 VIEWING ANGLES (degrees):
 Horizontal 0.0
 Vertical 0.0

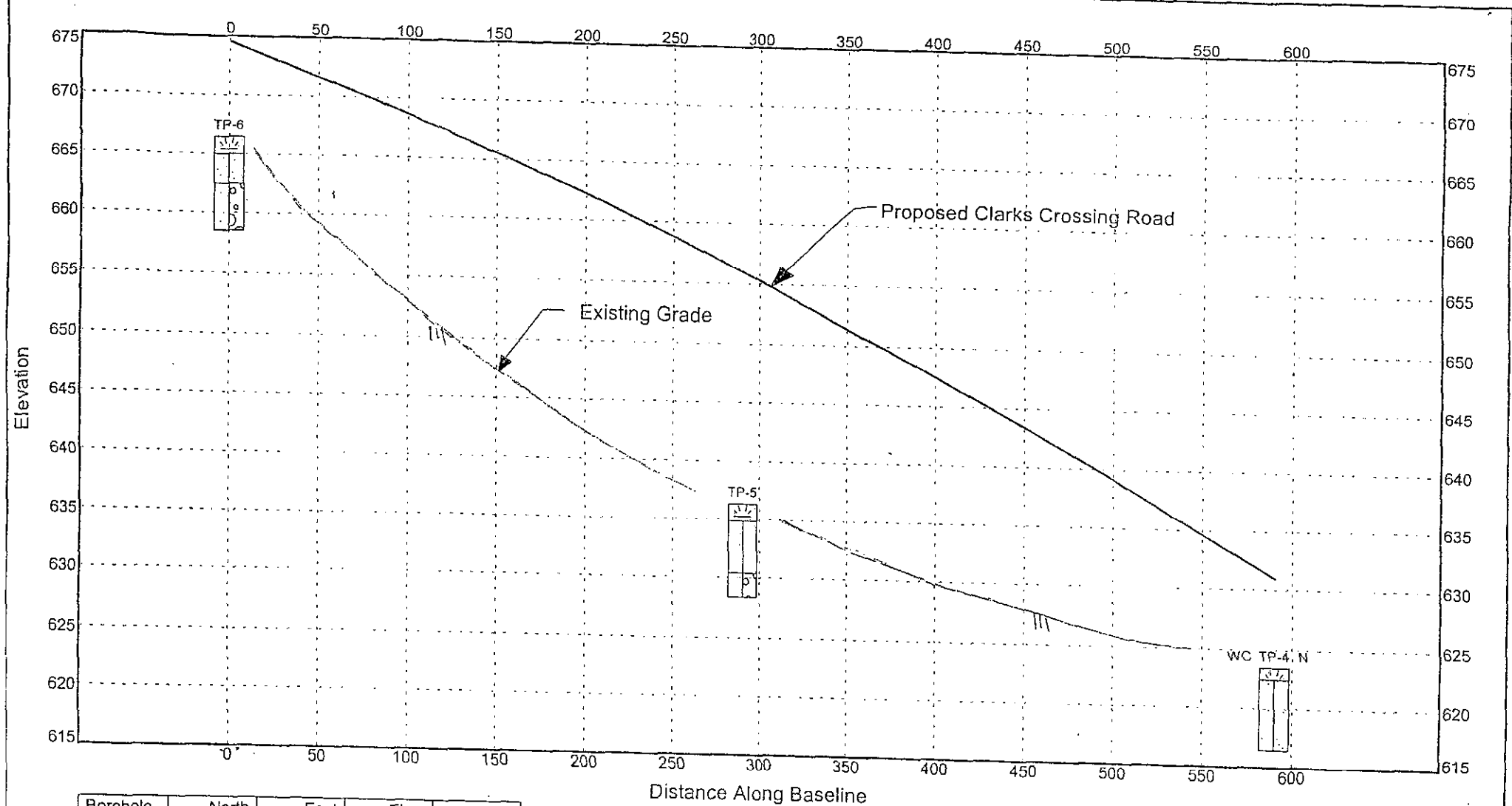
Position	North	East
Left, Front	575125	1235473
Right, Front	575671	1236310
Left, Back	575125	1235473
Right, Back	575671	1236310

SUBSURFACE FENCE DIAGRAM Section C-C

Clarksburg Town Center

Montgomery County, Maryland

PROJECT #	DATE	FIGURE
99530	Aug 01	5



Borehole	North	East	Elev.	Depth
TP-4	0	1600	623.5	7.0
TP-5	0	1300	636.4	8.0
TP-6	0	1010	666.5	8.0

DISTANCES:

Beginning 0

Ending 600

VIEWING ANGLES (degrees):

Horizontal 0.0

Vertical 0.0

Position	North	East
Left, Front	0	1010
Right, Front	0	1610
Left, Back	0	1010
Right, Back	0	1610

SUBSURFACE FENCE DIAGRAM
Clarks Crossing Drive

Clarksburg Town Center

Montgomery County, Maryland

PROJECT #	DATE	FIGURE
99530	Aug 23, 2001	6

Subsurface Data
Clarksburg Town Center
GTA 99530

Test Pit or Boring # #	Total Depth (ft)	Approx. Surface Elevation (ft MSL)	Approx. Proposed Subgrade (ft MSL)	Approximate Cut (Fill) to Subgrade (ft)	Approx. Depth to Materials N>50 (ft)	Approx. Elevation of Materials N>50 (ft MSL)
TP-4	7.0	623.5	632.3	(8.80)	*	*
TP-5	8.0	636.4	656.0	(19.60)	*	*
TP-6	8.0	666.5	675.0	(8.50)	*	*
TP-7	10.5	662.8	660.0	2.80	*	*
J-1	15.0	674.2	674.0	0.20	12.0	662.2
L-1	10.0	674.2	676.0	(1.8)	7.0	667.2
L-2	10.0	667.6	672.0	(4.4)	8.0	659.6
GW-4	10.0	644.3	630.0	14.3	17.0	627.3
SB-12	12.0	650.7	662.0	(11.3)	7.0	643.7

* No SPT data generated for test pits

The borings were dry to the cave-in depth reported on the logs

APPENDIX B

SOIL BORING LOGS

FIELD CLASSIFICATION SYSTEM FOR SOIL EXPLORATION

NON COHESIVE SOILS (Silt, Sand, Gravel and Combinations)

Density

Very Loose	- 5 blows/ft. or less
Loose	- 6 to 10 blows/ft.
Medium Dense	- 11 to 30 blows/ft.
Dense	- 31 to 50 blows/ft.
Very Dense	- 51 blows/ft. or more

Particle Size Identification

Boulders	- 8-inch diameter or more
Cobbles	- 3- to 8-inch diameter
Gravel	- Coarse - 1 to 3 inch
	- Medium - 1/2 to 1 inch
	- Fine - 1/4 to 1/2 inch
Sand	- Coarse - 0.6mm to 1/4 inch
	- Medium - 0.2 mm to 0.6 mm
	- Fine - 0.05 mm to 0.2 mm
	- 0.06 mm to 0.002 mm

Relative Proportions

Descriptive Term	Percent
Trace	1 - 10
Little	11 - 20
Some	21 - 35
And	36 - 50

COHESIVE SOILS (Clay and Silt Combinations)

Consistency

Very Soft	- 3 blow/ft.
Soft	- 4 to 5 blows/ft.
Medium Stiff	- 6 to 10 blows/ft.
Stiff	- 11 to 15 blows/ft.
Very Stiff	- 16 to 30 blows/ft.
Hard	- 31 blows/ft. or more

Plasticity

Degree of Plasticity	Plasticity Index
None to slight	0 - 4
Slight	5 - 7
Medium	8 - 50
High to Very High	Over 50

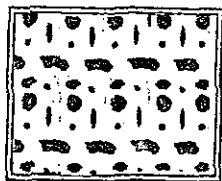
Classification on logs are made by visual inspection.

Standard Penetration Test - Driving a 2.0" O.D., 1 3/8" I.D., sampler a distance of one foot into undisturbed soil with a 140-pound hammer free falling a distance of 30 inches. It is customary to drive the spoon 6 inches to seat into undisturbed soil, then perform the test. The number of hammer blows for seating the spoon and making the tests are recorded for each 6 inches of penetration on the drill log. The standard penetration test results can be obtained by adding at last two figures.

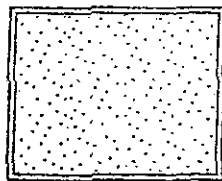
Strata Changes - In the column "Soil Descriptions" on the drill log, the horizontal lines represent approximate strata changes.

Groundwater observations were made at the times indicated. Porosity of soil strata, weather conditions, site topography, etc. may cause changes in the water levels indicated on the logs.

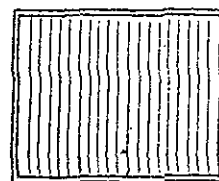
Graphic Legend:



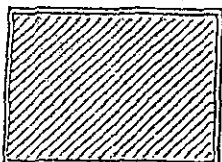
Gravel



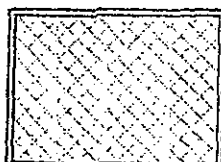
Sand



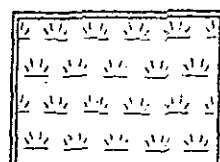
Silt



Clay



Fill



Topsoil

LOG OF BORING NO. TP-4

Sheet 1 of 1

PROJECT: **Clarksburg Town Center**
 PROJECT NO: **99530**
 PROJECT LOCATION: **Montgomery County, Maryland**

WATER LEVEL: ☒ **Dry** ☐ **W** ☐ **W**
 DATE: **12/05/00**
 CAVED (ft): _____

DATE STARTED: **December 5, 2000**
 DATE COMPLETED: **December 5, 2000**

GROUND SURFACE ELEVATION: **623.5**
 DATUM: **MSL**
 EQUIPMENT: **Backhoe**
 LOGGED BY: **S. Cutter**
 CHECKED BY: **P. Klima**

DRILLING CONTRACTOR: _____
 DRILLER: _____
 DRILLING METHOD: **Test Pit**
 SAMPLING METHOD: **Test Pit**

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 inches	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS GRAPHIC SYMBOL	DESCRIPTION	REMARKS
1	0.0				623.5	0		Topsoil.	Water Not Encountered.
					622.5		SM	Brown, Silty Sand with Gravel. AASHTO: A-2-4	
					616.5	5		Bottom of Hole at 7.0 ft. Backfilled Upon Completion.	
Location: Clarksburg Crossing Drive, CL Sta. 16+00 Proposed Finish Elevation: 632.3									Coordinates: N: 0.0 E: 1600.0

NOTES:



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LOG OF BORING NO. TP-4

LOG OF BORING NO. TP-5





Sheet 1 of 1

PROJECT: Clarksburg Town Center
PROJECT NO: 99530
PROJECT LOCATION: Montgomery County, Maryland

WATER LEVEL: ∇ Dry ∇ ∇
DATE: 12/05/00
CAVED (ft):

DATE STARTED: December 5, 2000
DATE COMPLETED: December 5, 2000
DRILLING CONTRACTOR:
DRILLER:
DRILLING METHOD: Test Pit
SAMPLING METHOD: Test Pit

GROUND SURFACE ELEVATION: 636.4
DATUM: MSL
EQUIPMENT: Backhoe
LOGGED BY: S. Cutter
CHECKED BY: P. Klima

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 inches	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS	GRAPHIC SYMBOL	DESCRIPTION		REMARKS
1	0.0				636.4	0			Topsoil	Water Not Encountered.	
					634.9		SM		Brown and gray, heavily weathered Silty SAND with Rock Fragments. AASHTO: A-2-4		
						5					
					630.4		SM GM		Brown and gray, Silty SAND with lightly weathered Rock Fragments. AASHTO: A-2-4		
					628.4				Bottom of Test Pit at 8.0 ft. Backfilled Upon Completion.		
Location: Clarksburg Crossing Drive, CL Sta. 13+00 Proposed Finish Elevation: 656.0										Coordinates: N: 0.0 E: 1300.0	

NOTES:

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LOG OF BORING NO. TP-5

Sheet 1 of 1

LOG OF BORING NO. TP-6







Sheet 1 of 1

PROJECT: **Clarksburg Town Center**
 PROJECT NO: **99530**
 PROJECT LOCATION: **Montgomery County, Maryland**

WATER LEVEL: ☒ **Dry** ☐ ☐
 DATE: **12/05/00**
 CAVED (ft): ☐ ☐ ☐

DATE STARTED: **December 5, 2000**
 DATE COMPLETED: **December 5, 2000**
 DRILLING CONTRACTOR:
 DRILLER:
 DRILLING METHOD: **Test Pit**
 SAMPLING METHOD: **Test Pit**

GROUND SURFACE ELEVATION: **666.5**
 DATUM: **MSL**
 EQUIPMENT: **Backhoe**
 LOGGED BY: **S. Cutter**
 CHECKED BY: **P. Klima**

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 inches	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS	GRAPHIC SYMBOL	DESCRIPTION		REMARKS
1	0.0				666.5	0			Topsoil.	Water Not Encountered.	
					665.0			Brown, Silty SAND.			
						SM		AASHTO: A-2-4			
					662.5			Brown and gray, Silty SAND with lightly weathered Rock Fragments.			
						5	SM GM		AASHTO: A-2-4		
					658.5				Bottom of Test Pit at 8.0 ft.		
									Backfilled Upon Completion.		
Location: CL Intx Clarksburg Crossing Drive and Clarksburg Square Road											
Finish Elevation: 675.0											
									Coordinates:		
									N: 0.0		
									E: 1010.0		

NOTES:



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LOG OF BORING NO. TP-6

LOG OF BORING NO. TP-7

Sheet 1 of 1

PROJECT: Clarksburg Town Center
PROJECT NO: 99530
PROJECT LOCATION: Montgomery County, Maryland

WATER LEVEL: ☒ Dry ☐ ☐
DATE: 12/05/00
CAVED (ft):

DATE STARTED: December 5, 2000
DATE COMPLETED: December 5, 2000
DRILLING CONTRACTOR:
DRILLER:
DRILLING METHOD: Test Pit
SAMPLING METHOD: Test Pit

GROUND SURFACE ELEVATION: 662.8
DATUM: MSL
EQUIPMENT: Backhoe
LOGGED BY: S. Cutter
CHECKED BY: P. Klima

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 inches	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
1	0.0				662.8	0			Topsoil.	Water Not Encountered.
					661.8		SM GM		Red to brown, Silty ROCK FRAGMENTS and SAND.. AASHTO: A-2-4 / A-1-b	
						5				
						10			Bottom of Test Pit at 10.5 ft.	Coordinates: N: E:
					652.3				Backfilled Upon Completion.	
									Location: Clarksburg Square Road, CL Sta. 38+30 Proposed Finish Elevation: 660.0	

NOTES:



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LOG OF BORING NO. TP-7

LOG OF BORING NO. GW-4

Sheet 1 of 1

PROJECT: **Clarksburg Town Center**
 PROJECT NO: **99530**
 PROJECT LOCATION: **Montgomery County, Maryland**

WATER LEVEL: ☒ Dry ☒ Dry ☐
 DATE: **08/03/01** **08/06/01**
 CAVED (ft): **17.0** **17.5**

DATE STARTED: **August 3, 2001**
 DATE COMPLETED: **August 3, 2001**
 DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
 DRILLER: **Geo-Technology Associates, Inc.**
 DRILLING METHOD: **HSA**
 SAMPLING METHOD: **Split Spoon**

GROUND SURFACE ELEVATION: **644.3**
 DATUM: **MSL**
 EQUIPMENT: **B-61**
 LOGGED BY: **TC/DK**
 CHECKED BY: **S. Rowe**

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 inches	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
1	0.0	6	4-6-7	13	644.3	0	ML		Red-brown, moist, medium dense to very loose, Clayey SILT and coarse to fine SAND, little Rock Fragments. (Possible Fill)	Topsoil: 0 in.
2	2.5	13	3-4-5	9					AASHTO: A-4	
3	5.0	3	2-1-2	3		5				Water Not Encountered While Drilling.
					637.3		SM		Brown to gray-brown, moist, medium dense to very dense, medium to fine SAND, some Silt, little medium to fine Rock Fragments.	
4	8.5	8	4-5-5	11		10			AASHTO: A-2-4	
									USDA: Sandy Loam	
5	13.5	8	7-6-14	20		15				
6	18.5	2.5	50/5.5"	50/5.5"		20				
7	23.5	3	14-38-50/3"	50/3"		25				
					619.3				Bottom of Hole at 25.0 ft.	Coordinates: N: 574798.0 E: 1235862.0

NOTES:



GEO-TECHNOLOGY ASSOCIATES, INC.

9090 Junction Drive, Suite 9

LOG OF BORING NO. GW-4

Sheet 1 of 1

LOG OF BORING NO. J-1

Sheet 1 of 1

PROJECT: **Clarksburg Town Center**
 PROJECT NO: **99530**
 PROJECT LOCATION: **Montgomery County, Maryland**

WATER LEVEL: ☒ **Dry** ☒ **Dry** ☒ **Dry**
 DATE: **08/03/01** **08/06/01**
 CAVED (ft): **9.8** **10.5**

DATE STARTED: **August 3, 2001**
 DATE COMPLETED: **August 3, 2001**
 DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
 DRILLER: **Geo-Technology Associates, Inc.**
 DRILLING METHOD: **HSA**
 SAMPLING METHOD: **Split Spoon**

GROUND SURFACE ELEVATION: **674.2**
 DATUM: **MSL**
 EQUIPMENT: **B-61**
 LOGGED BY: **TC/DK**
 CHECKED BY: **S. Rowe**

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 inches	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
1	0.0	8	3-3-3	6	674.2	0	ML		Brown, moist, loose, SILT, some coarse to fine Sand, some fine Rock Fragments.	Topsoil: in.
2	2.5	7	9-13-18	31	671.7		SM		AASHTO: A-4 Red-brown, moist, medium dense to very dense, coarse to fine, SAND, some Silt, some fine Rock Fragments.	Water Not Encountered While Drilling.
3	5.0	9	7-10-11	21		5			AASHTO: A-2-4	Bag Sample: 1.0 - 6.0 ft.
4	8.5	14	7-12-21	33		10				
5	13.5	5.5	12-50/5.5"	50/5.5"	659.2	15			Bottom of Hole at 15.0 ft.	
Boring Location: 20" WAT Line, Sta. 6+30										Coordinates: N: 575407.0 E: 1236586.0

NOTES:



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 Annapolis, Maryland 21403

LOG OF BORING NO. J-1

Sheet 1 of 1

LOG OF BORING NO. L-1

Sheet 1 of 1

PROJECT: **Clarksburg Town Center**
PROJECT NO: **99530**
PROJECT LOCATION: **Montgomery County, Maryland**

WATER LEVEL: ∇ **Dry** ∇ **Dry** ∇
DATE: **08/03/01** **08/06/01**
CAVED (ft): **14.5** **14.1**

DATE STARTED: **August 3, 2001**
DATE COMPLETED: **August 3, 2001**
DRILLING CONTRACTOR: **Geo-Technology Associates, Inc.**
DRILLER: **Geo-Technology Associates, Inc.**
DRILLING METHOD: **HSA**
SAMPLING METHOD: **Split Spoon**

GROUND SURFACE ELEVATION: **674.2**
DATUM: **MSL**
EQUIPMENT: **B-61**
LOGGED BY: **TC/DK**
CHECKED BY: **S. Rowe**

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 inches	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
1	0.0	8	4-5-8	13	674.2	0	SM		Brown to red-brown, moist to dry, medium dense to very dense, coarse to fine SAND and SILT, some coarse to fine Rock Fragments.	Topsoil: in.
2	2.5	9	8-16-17	23					AASHTO: A-4 / A-2-4	Water Not Encountered While Drilling.
3	5.0	9	6-9-10	19		5				
4	8.5	11	16-24-33	77		10				
5	13.5	15	31-38-24	62		15				
6	18.5	1	50/1"	50/1"	654.2	20			Bottom of Hole at 20.0 ft.	
									Boring Location: Clarksburg Square Road, CL Sta. 44+55, 5 ft. Right	Coordinates: N: 575673.0 E: 1236260.0

NOTES:



GEO-TECHNOLOGY ASSOCIATES, INC.
9090 Junction Drive, Suite 9

LOG OF BORING NO. L-1

Sheet 1 of 1

LOG OF BORING NO. L-2

Sheet 1 of 1

PROJECT: Clarksburg Town Center
PROJECT NO: 99530
PROJECT LOCATION: Montgomery County, Maryland

WATER LEVEL: ☒ Dry ☒ Dry ☒
DATE: 08/03/01 08/06/01
CAVED (ft): 9.8 10.6

DATE STARTED: August 3, 2001
DATE COMPLETED: August 3, 2001
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: Geo-Technology Associates, Inc.
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

GROUND SURFACE ELEVATION: 667.6
DATUM: MSL
EQUIPMENT: B-61
LOGGED BY: TC/DK
CHECKED BY: S. Rowe

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 inches	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
1	0.0	6	4-6-6	12	667.6	0	SM		Brown, moist, medium dense, micaceous, SAND and Clayey SILT, some coarse to fine Rock Fragments.	Topsoil: in.
2	2.5	9	6-10-12	22	665.1		SM		AASHTO: A-4 Brown, moist to dry, medium dense, medium to fine SILT and coarse to fine SAND, little fine Rock Fragments.	Water Not Encountered While Drilling.
3	5.0	12	15-19-22	41	662.6	5	SM		AASHTO: A-4 Gray-brown, moist to dry, dense to very dense, coarse to fine SAND, some Silt, little fine Rock Fragments.	Bag Sample: 1.0 - 6.0 ft.
4	8.5	15	23-28-47	75		10			AASHTO: A-2-4	
5	13.5	3	50/3"	50/3"	652.6	15			Bottom of Hole at 15.0 ft.	
Boring Location: 20" WAT Line, Sta. 14+25										
Coordinates:										
N: 575131.0										
E: 1235469.0										

NOTES:



GEO-TECHNOLOGY ASSOCIATES, INC.

9090 Junction Drive, Suite 9

LOG OF BORING NO. L-2

LOG OF BORING NO. SB-12

Sheet 1 of 1

PROJECT: Clarksburg Town Center
PROJECT NO: 99530
PROJECT LOCATION: Montgomery County, Maryland

WATER LEVEL: ∇ Dry ∇ Dry ∇
DATE: 08/03/01 08/06/01
CAVED (ft): 6.2 6.5

DATE STARTED: August 3, 2001
DATE COMPLETED: August 3, 2001
DRILLING CONTRACTOR: Geo-Technology Associates, Inc.
DRILLER: Geo-Technology Associates, Inc.
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon

GROUND SURFACE ELEVATION: 650.7
DATUM: MSL
EQUIPMENT: B-61
LOGGED BY: TC/DK
CHECKED BY: S. Rowe

SAMPLE NUMBER	SAMPLE DEPTH (ft)	SAMPLE RECOVERY (in)	SAMPLE BLOWS/6 inches	N (blows/ft)	ELEVATION (ft)	DEPTH (ft)	USCS	GRAPHIC SYMBOL	DESCRIPTION	REMARKS
1	0.0	10	3-6-5	11	650.7	0	SM		Brown, moist, medium dense, micaceous SAND and Clayey SILT, some coarse to fine Rock Fragments.	Topsoil: in.
2	2.5	3	7-12-12	24	648.2		SM		AASHTO: A-4 Brown, moist to dry, medium dense, medium to fine SILT and , coarse to fine SAND, little Rock Fragments.	Water Not Encountered While Drilling.
3	5.0	4	7-12-13	25	643.7	5			AASHTO: A-4	
4	8.5	3	21-50/3"	50/3"	640.7	10	SM		Gray-brown, moist to dry, dense to very dense, coarse to fine SAND, some Silt, little fine Rock Fragments.	
									AASHTO: A-2-4 Bottom of Hole at 10.0 ft.	
Boring Location: CL Intersection - Clarksburg Square Road and Clarksmead Drive										Coordinates: N: 575498.0 E: 1236110.0

NOTES:



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LOG OF BORING NO. SB-12

Sheet 1 of 1

APPENDIX C

LABORATORY TEST RESULTS

GEO-TECHNOLOGY ASSOCIATES, INC.
Natural Moisture Content Summary

Clarksburg Town Center
 August 14, 2001
 99530

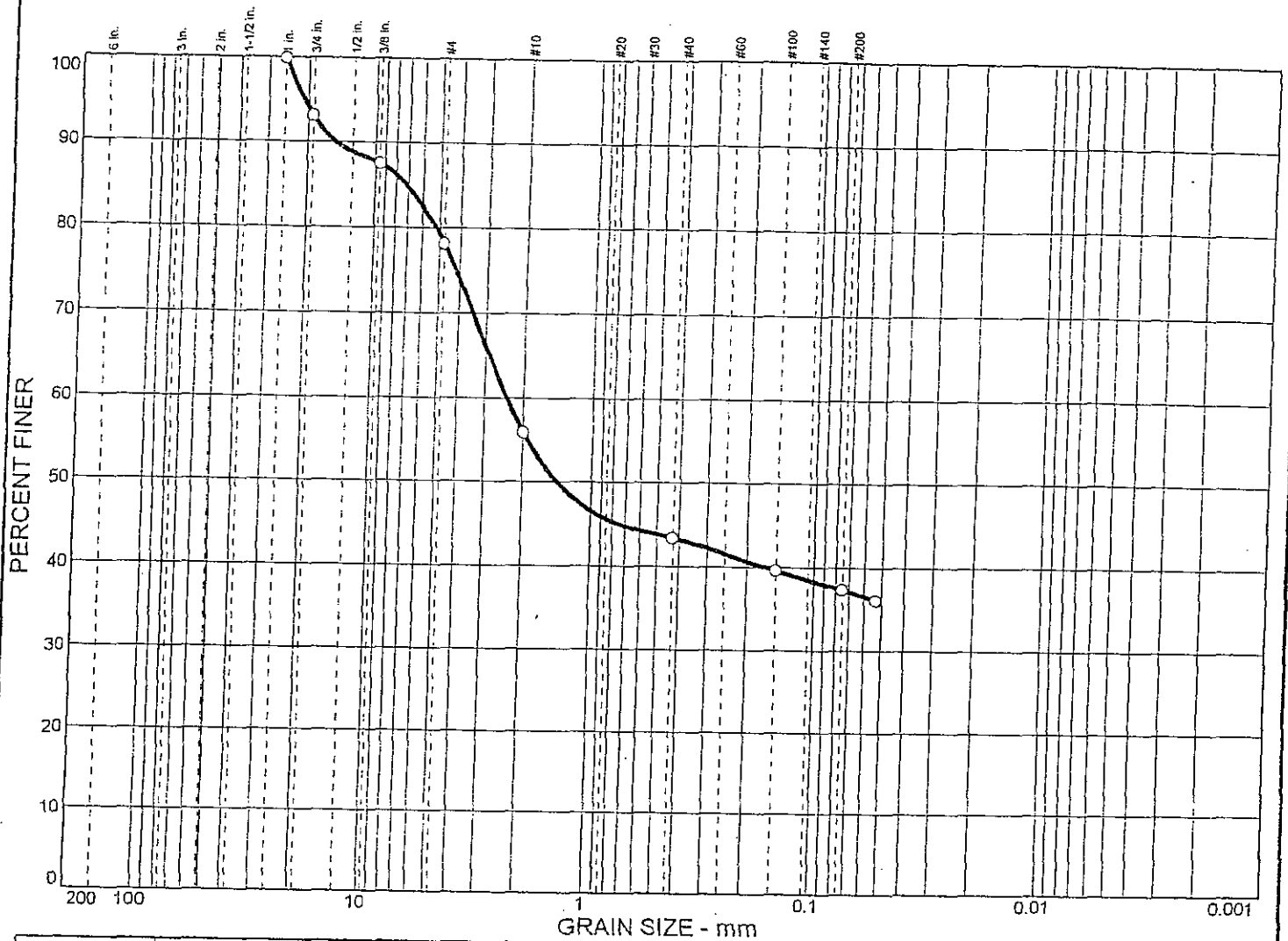
BORING #	SAMPLE #	DEPTH (FT)	NATURAL MOISTURE CONTENT %
SB-12	S-1	0.0-1.5	18.5
	S-2	2.5-4.0	14.5
	S-3	5.0-6.5	12.0
	S-4	8.5-10.0	9.4
TP-4	S-1	3	19.2
	S-3	9	19.9
TP-5	S-1	2	20.2
	S-2	4	18.2
	S-2	6	18.9
	S-3	7	16.4
TP-6	S-1	2	22.6
	S-2	5	24.2
	S-3	8	21.8
	S-4	10	23.2
TP-7	S-1	2	23.5
	S-2	5	19.8
L-1	S-1	0.1-5.0	13.1
	S-2	2.5-4.0	9.2
	S-3	5.0-6.5	2.0
	S-4	8.5-10.0	1.5
	S-5	13.5-15.0	8.9
	S-6	18.5-20.0	2.5

GEO-TECHNOLOGY ASSOCIATES, INC.
Natural Moisture Content Summary

Clarksburg Town Center
August 14, 2001
99530

BORING #	SAMPLE #	DEPTH (FT)	NATURAL MOISTURE CONTENT %
L-2	S-1	0.0-1.5	14.0
	S-2	2.5-4.0	13.5
	S-3	5.0-6.5	20.5
	S-4	8.5-10.0	7.4
	S-5	13.5-15.0	9.1
J-1	S-1	0.0-1.5	22.3
	S-2	2.5-4.0	11.3
	S-3	5.0-6.5	13.5
	S-4	8.5-10.0	13.4
	S-5	13.5-15.0	14.5
GW-4	S-1	0.0-1.5	15.9
	S-2	2.5-4.0	23.4
	S-3	5.0-6.5	20.7
	S-4	8.5-10.0	9.3
	S-5	13.5-15.0	13.1
	S-6	18.5-20.0	1.0
	S-7	23.5-25.0	7.9

PARTICLE SIZE DISTRIBUTION TEST REPORT



% + 3"	% GRAVEL	% SAND	% SILT	% CLAY
0.0	21.9	40.7	37.4	

LL	PI	D ₈₅	D ₆₀	D ₅₀	D ₃₀	D ₁₅	D ₁₀	C _c	C _u
40.0	4	7.18	2.38	1.42					

MATERIAL DESCRIPTION	USCS	AASHTO
Brown medium to coarse SAND and Clayey SILT, some coarse to fine Gravel.	SM	A-4(0)

Project No. 99530 Client: Project: Clarksburg Town Center Source: L-2 Sample No.: S-1 Elev./Depth: 0.0'-1.5'	Remarks: Natural Moisture: 14.0% August 13, 2001
PARTICLE SIZE DISTRIBUTION TEST REPORT GEO-TECHNOLOGY ASSOCIATES, INC.	

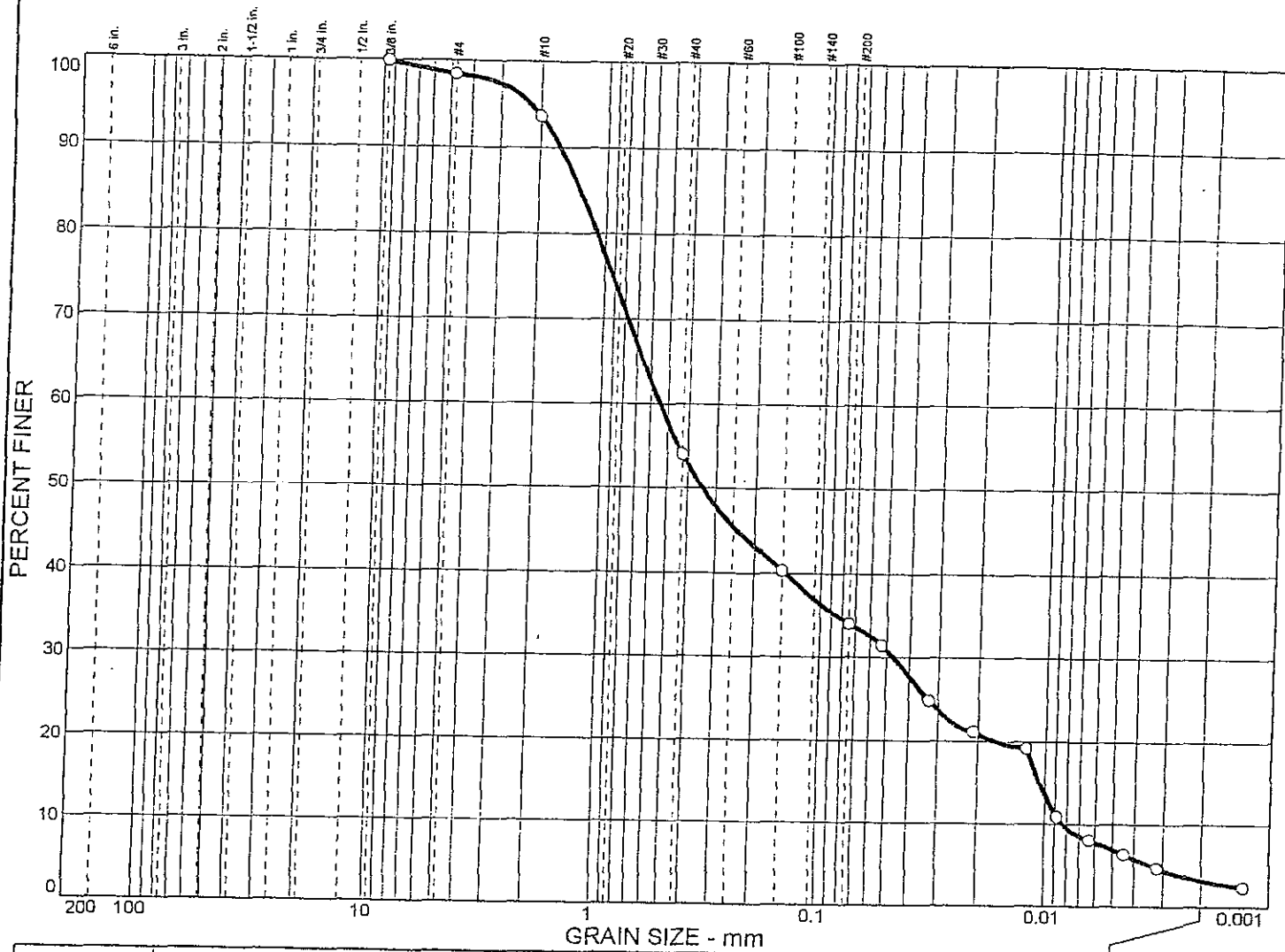
The graph displays the grain size distribution of a material. The y-axis represents the percentage of material finer than a given grain size, ranging from 0 to 100. The x-axis represents the grain size in millimeters on a logarithmic scale, ranging from 200 mm to 0.001 mm. The curve shows a steep drop between 1 mm and 0.1 mm, indicating a high percentage of material is finer than 1 mm. A secondary drop is observed between 0.075 mm and 0.0075 mm, suggesting a bimodal distribution with a significant amount of material in the 0.075 to 0.0075 mm range.

Grain Size (mm)	Percent Finer (%)
200	100
100	100
50	100
25	100
12.5	100
6.3	100
3.15	100
1.6	100
0.85	100
0.425	98
0.25	95
0.15	90
0.075	52
0.0475	40
0.03	35
0.02	32
0.015	20
0.01	19
0.0075	14
0.006	11
0.005	10
0.004	10
0.003	10
0.0025	6
0.002	4

[illegible]

Project No. 99530 Client: Project: Clarksburg Town Center Source: L-2 Sample No.: S-3 Elev./Depth: 5.0'-6.5'	Remarks: ○ Natural Moisture: 20.5% USDA: Sandy loam August 13, 2001
PARTICLE SIZE DISTRIBUTION TEST REPORT GEO-TECHNOLOGY ASSOCIATES, INC.	
Plate 3	

PARTICLE SIZE DISTRIBUTION TEST REPORT

[illegible]

MATERIAL DESCRIPTION	USCS	AASHTO
○ Brown medium to fine SAND, some Silt, trace fine Gravel.	SM	A-2-4(0)

Project No. 99530	Client:
-------------------	---------

Project: Clarksburg Town Center

○ Source: GW-4

Sample No.: S-6

Elev./Depth: 18.5'-
20.0'

Remarks:

○ Natural Moisture: 13.4%

USDA: Sandy loam

August 13, 2001

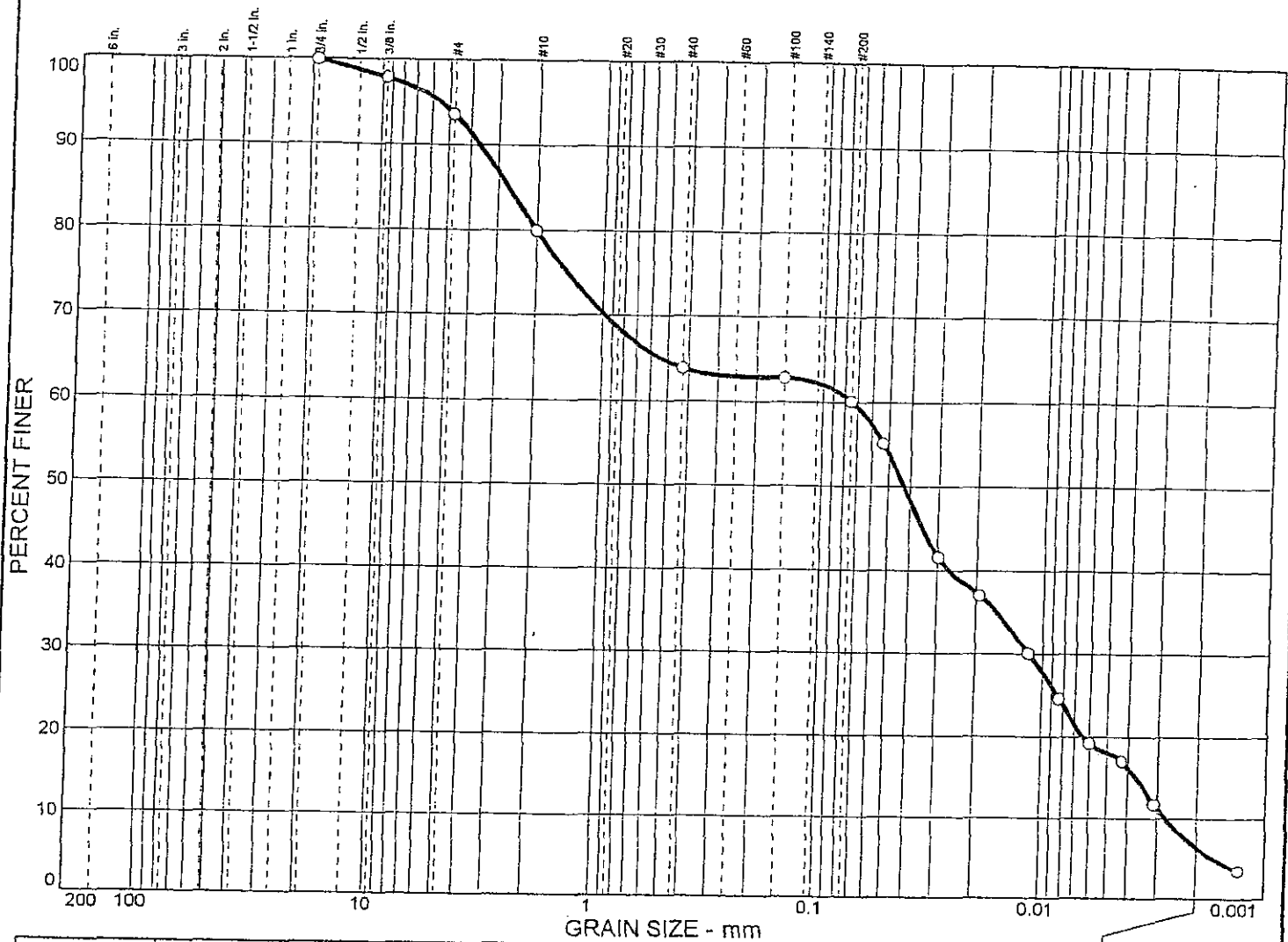
PARTICLE SIZE DISTRIBUTION TEST REPORT

GEO-TECHNOLOGY ASSOCIATES, INC.

Plate

4

PARTICLE SIZE DISTRIBUTION TEST REPORT



PERCENT FINER

GRAIN SIZE - mm

Grain Size (mm)	Percent Finer (%)
20	100
10	80
4.75	72
2.5	63
1.18	43
0.6	35
0.3	31
0.15	29
0.075	22
0.0425	19
0.025	16
0.015	13
0.0075	12
0.00425	8
0.0025	6
0.0015	4

[illegible]

MATERIAL DESCRIPTION	USCS	AASHTO
○ Red brown coarse to fine SAND, some Silt, some fine Gravel.	SM	A-2-4(0)

Project No. 99530 Client:
Project: Clarksburg Town Center
○ Source: J-1 Sample No.: S-2 Elev./Depth: 2.5'-4.0'

Remarks:
○ Natural Moisture: 11.3%
USDA: Sandy loam
August 13, 2001

Date 8/13/01
 Source of Material J-1
 Sample Number/Depth Bulk / 2.5-6 ft
 Description of Material Red brown cf SAND, s Silt, sf Gravel.
 Test Method ASTM D698 Method A

TEST RESULTS

Maximum Dry Density 116.2 PCF
 Optimum Moisture Content 13.1 %
 Natural Moisture Content 11.3 %

SOIL CLASSIFICATIONS

USCS Classification SM
 AASHTO Classification A-2-4

ATTEBERG LIMITS

LL NP	PL NP	PI NP

Curves of 100% Saturation
 for Specific Gravity Equal to:

2.80
 2.70
 2.60

DRY DENSITY, pcf

WATER CONTENT, %

MOISTURE-DENSITY RELATIONSHIP

Project: Clarksburg Town Center
 Location: Montgomery County, Maryland
 Number: 99530

Geo-Technology Associates, Inc.
 9090 Junction Drive, Suite 9
 Annapolis Junction, MD 20701
 Telephone: 410-792-9446
 Fax: 410-792-7395



Date 8/13/01
 Source of Material L-2
 Sample Number/Depth Bulk / 2.5-5.0 Ft
 Description of Material Brown mf SILT and cf SAND, little fine Gravel.
 Test Method ASTM D698 Method A

TEST RESULTS

Maximum Dry Density 123.2 PCF
 Optimum Moisture Content 10.3 %
 Natural Moisture Content 13.5 %

SOIL CLASSIFICATIONS

USCS Classification SM
 AASHTO Classification A-4

ATTERBERG LIMITS

LL NP	PL NP	PI NP

Curves of 100% Saturation
 for Specific Gravity Equal to:

2.80

2.70

2.60

DRY DENSITY, pcf

WATER CONTENT, %

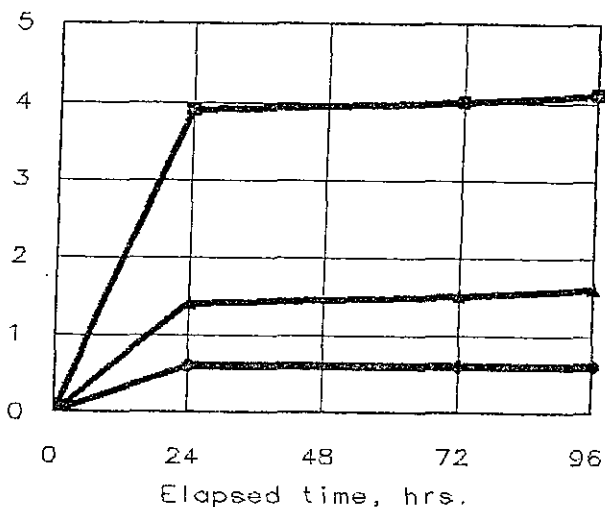
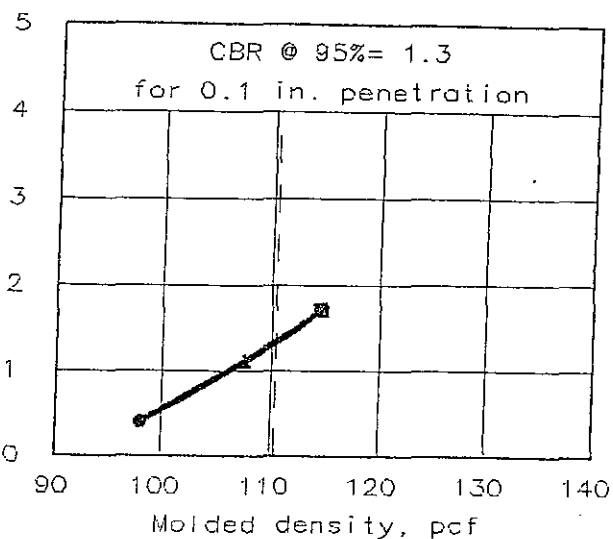
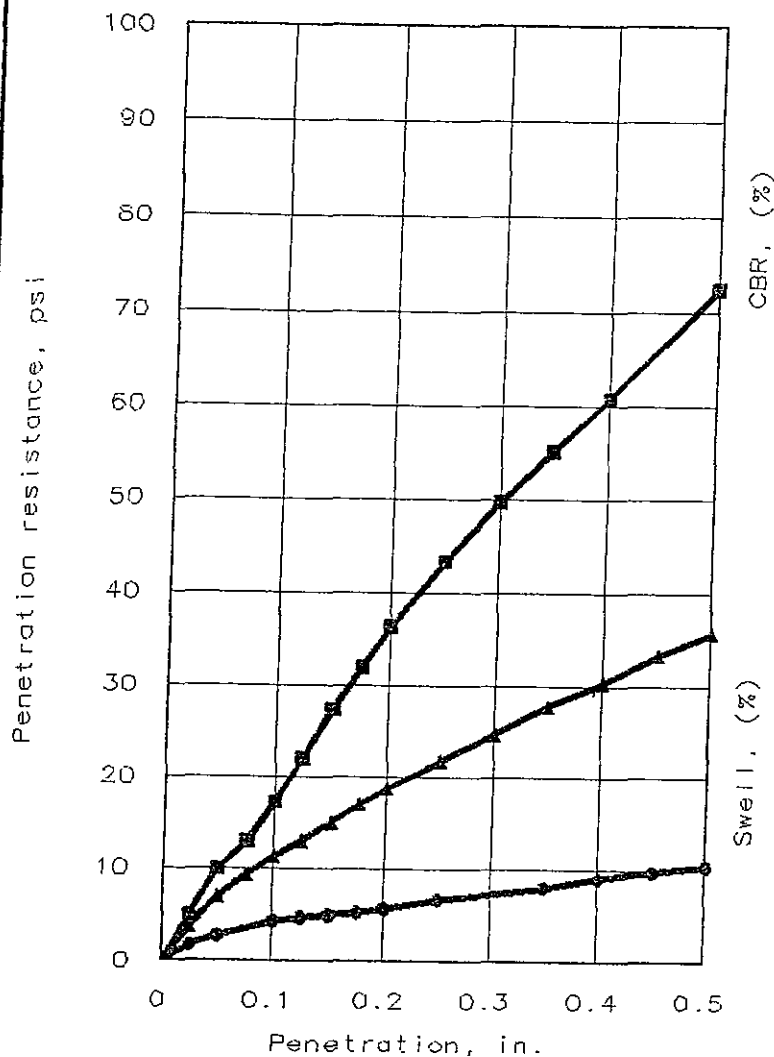
MOISTURE-DENSITY RELATIONSHIP

Project: Clarksburg Town Center
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BEARING RATIO TEST REPORT



	Molded			Soaked			CBR, (%)		Lin. Cor.	Pen. Sur.	Swell %
	Dens.	% max	moist	Dens.	% max	moist	0.1"	0.2"			
1 ●	98.0	84.3	12.8%	97.4	83.8	25.1%	0.4	0.4	0	10	0.6
2 ▲	107.5	92.5	12.8%	105.8	91.0	23.3%	1.1	1.2	0	10	1.6
3 ■	114.6	98.6	12.8%	110.1	94.8	19.3%	1.7	2.4	0	10	4.1

MATERIAL DESCRIPTION							USCS	Max. dens.	Opt. w.c.	LL	PI
Red brown of SAND, s Silt, sf Gravel.							SM	116.2	13.1	NP	NP

Project No: 99530
 Project: Clarksburg Town Center
 Location: J-1 (1.0'-6.0')

Date: August 16, 2001

Test Descr./Remarks:
 Three-point CBR
 ASTM D1883
 Maximum Density and
 Optimum Moisture
 Determined as per
 ASTM D1557 A

Fig. No. 1

BEARING RATIO TEST REPORT
GEO-TECHNOLOGY ASSOCIATES, INC

SUMMARY OF SOIL ANALYSIS

Project Name Clarksburg Town Center
 Project No. 99530
 Test Date 8/20/01

Computed SCR _____
 Checked JPK _____
 Sheet No. 1 of 1 _____

Boring or Test Pit No.	C/L Station	Offset Location (ft.)	Depth (ft.)	AASHTO Classification	Passing Sieve		Maximum Dry Density	Optimum Moisture (%)	In-Place Moisture (%)	LL (%)	PI (%)	Remarks
#40	#200											
Clarks Crossing Drive												
TP-4	16+00	0	0.0 - 7.0	A-2-4								Similar to L-2, 5.0' - 15.0'
TP-5	13+00	0	0.0 - 8.0	A-2-4								Similar to L-2, 5.0' - 15.0'
TP-6	10+32	0	0.0 - 8.0	A-2-4								Similar to L-2, 5.0' - 15.0'
Clarksburg Square Road												
L-2	34+60	5' Lt	0.0 - 2.5	A-4	43	38				40	4	Similar to J-1, 0.0' - 2.5'
			2.5 - 5.0	A-4	58	47				NP	NP	Similar to J-1, 0.0' - 2.5'
			5.0 - 15.0	A-2-4	52	32	123.2	10.3	13.5	NP	NP	Meets MCDPS requirements
TP-6	35+23	0	0.0 - 8.0	A-2-4								Similar to L-2, 5.0' - 15.0'
TP-7	38+30	0	0.0 - 10.5	A-2-4								Similar to L-2, 5.0' - 15.0'
SB-12	CL INTX Clarksmead Dr.		0.0 - 7.0	A-4								Similar to J-1, 0.0' - 2.5'
			7.0 - 10.0	A-2-4								Similar to L-2, 5.0' - 15.0'
L-1	44+55	5' Rt	0.0 - 20.0	A-2-4								Similar to L-2, 5.0' - 15.0'
20" Water Line												
J-1	6+30	0	0.0 - 2.5	A-4	64	60	116.2	13.1	11.3	NP	NP	Meets MCDPS requirements
			2.5 - 15.0	A-2-4								Similar to L-2, 5.0' - 15.0'

F:\DOCS\INMC\SOILSUM\Clarksburg TC.xls

Geo-Technology Associates, Inc.
 9090 Junction Drive, Suite 9
 Annapolis Junction, Maryland 20701